belkin

Advanced Secure Keyboard/Mouse (KM) Switch

User Manual

F1DN104K – Advanced Secure 4-Port Keyboard/Mouse (KM) Switch
F1DN108K – Advanced Secure 8-Port Keyboard/Mouse (KM) Switch

8820-01342 Rev. A00

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INTRODUCTION

Thank you for purchasing this Belkin Advanced Secure Keyboard/Mouse (K/M) Switch. This KM Switch is designed for use in secure environments across wide security gaps. This Secure KM Switch offers high security using optical data diodes on each channel. Optical data diodes are used to prevent data transfer between connected computers running at different security levels. This product provides the highest security safeguards and features, meeting the cyber prevention requirements of today, and the future.

This User Manual provides all the details you'll need to install and operate your new product, in addition to troubleshooting guidance, in the unlikely event of a problem.

What is a KM (Keyboard/Mouse) Switch?

There are many cases where one computer user needs to work simultaneously with few computers. In some cases users are having multiple displays attached to these multiple computers. The challenge is how a single user can interact with multiple computers having multiple displays. KVMs are not suitable for these users as they are designed to switch displays, allowing the user to only see and manage one target device at a given time. Using the Belkin Secure KM, users can see all the connected computers at the same time and easily decide on which computer they want to work.

A KM switch is a device that switches a single keyboard and mouse between multiple computers. A KM switch is essentially a KVM switch without the video switching—all displays are continuously connected to their respective computers so that you can see and manage all connected devices seamlessly, in real time. Multiply displays can be connected to each computer that is connected to the Belkin Secure KM. The Belkin Secure KM is designed to have up to eight computers connected and working simultaneously in any possible monitor setup. The configuration of the Belkin Secure KM can be done by using the KM presets or by using the easy-to-use configuration tool.

Package Contents

- Belkin Advanced Secure KM Switch
- 12V 1.5A DC Power Supply and Power Cord (for F1DN104K version only)
- Power Cord (for F1DN108K version only)
- Interchangeable Port Color Chips
- Port-Naming Labels
- Belkin USB Configuration Cable
- User Manual

Important Security Note:

If you are aware of potential security vulnerability while installing or operating this product, we encourage you to contact us immediately at the following email address: gov_security@belkin.com

Important: This Switch is equipped with active anti-tamper triggers. Any attempt to open the enclosure will activate the anti-tamper triggers and render the unit inoperable. If the unit's enclosure appears disrupted or if all the port LEDs flash continuously, please call Belkin Technical Support at (800) 282-2355.

Safety Precautions

Please read the following safety precautions carefully before using the product:

- Before cleaning, disconnect the product from the coupled power supply.
- Be sure not to expose the product to excessive humidity.
- Do not store or use for extensive period of time in extreme thermal conditions—it may shorten product lifetime.
- Be sure to install the product on a clean secure surface.
- Do not place the DCU cable in a path of foot traffic.
- If the product is not used for a long period of time, remove the KVM's wall-mount power supply from the mains jack.
- If one of the following situations occurs, get the product checked by a qualified service technician:
  - Liquid penetrates the product's case.
  - The product is exposed to excessive moisture or water.
  - The product is not working well even after carefully following the instructions in this user's manual.
  - The product has been dropped or is physically damaged.
  - The product has obvious signs of breakage or loose internal parts.
- Power supply cable overheated, or is broken or damaged. The product should be stored and used only in temperature and humidity controlled environments as defined in the product's environmental specifications.
- Product contains internal battery. Battery is non-replaceable. Never attempt to replace battery as any attempt to open product enclosure would permanently damage the product.
- The wall-mount power supply used with this product should be the model supplied by the manufacturer or an approved equivalent provided by Belkin or an authorized service provider. The use of an improper power source will void product warranty.

Security Features

The Belkin Advanced Secure KM Switch is the most advanced and secure commercially available KM Switch available today. This product is a derivative of the high-security Belkin KVM products used in the many high-security government, defense and military organizations. A summary of all the security features incorporated into the Switch is listed below:

Unidirectional Data Paths

Optical diodes are used to enforce unidirectional data flow from the peripheral devices to computers, thus preventing potential leakage paths between computers, even in the severe threat of two infected computers attacking the KM.

No Cross Cabling, No Shared Resources

There are no cables connecting two computers. This product is designed to securely operate even when peripheral devices are vulnerable to signaling attacks.

Dedicated Processors

The Belkin Secure KM features a dedicated processor per computer port to emulate peripheral devices. This keeps each computer running on different security levels, physically separated and secure at all times, and prevents any unintended data leakage between computers even when computers are infected by malicious code.

USB Device Detection

Console USB ports are protected from the use of storage and other unsafe USB devices through strong filtering (independent of other computer protection means). Unqualified devices are rejected when connected to the Belkin Secure KM. Only mouse and keyboard data are passed through.

Non-Reprogrammable Firmware/Non-Serviceable Hardware

The Switch features custom firmware that is not reprogrammable, preventing the ability to tamper with the KM logic.

Note: Belkin Secure KVMs cannot be upgraded, serviced, or repaired.

Heavy-Duty Enclosure

The Belkin Secure KM Switch uses a one-piece aluminum enclosure (for the F1DN104K model) or thick steel (for the F1DN108K model) to protect the product from physical tampering and to minimize radiated electromagnetic emissions that can be snooped or intercepted.

Active Always-On Anti-Tamper System

Active always-on chassis anti-tampering system prevents the KM electronic circuitry from being accessed and tampered with by permanently disabling the product once tampering is detected.

Tamper-Evident Tape

A holographic security tamper-evident label is placed on the enclosure to provide a visual indication if the Switch has been opened or compromised.

Secure Packaging

"Tear away" packaging ensures secure delivery of the Switch as it is routed to the end user.

Tamper-Proof Hardware

All integrated circuits are soldered directly to the printed circuit board to prevent tampering with the components.

No Memory Buffer

The Switch does not have a memory buffer and does not have the ability to store data. This prevents unintentional transfer of keystrokes or other data when switching between computers.

Common Criteria EAL 4+ Listing

The product is the only KM switch in the market that was evaluated and listed per Common Criteria standards. It is Common Criteria validated to EAL 4+ (Evaluation Assurance Level 4), and this product complies with a standard higher than Protection Profile v.2.1 to assure the highest level of protection.

Operational Features

The Belkin Advanced Secure KM Switch was designed with the user in mind for today's IT environment. Below is a summary of some features incorporated into the Switch.

Seamless Cursor Switching (SCS)

SCS allows the KM to switch automatically between computers once mouse cursor crosses display borders. The switching is seamless between multiple computers with cursor movement.

Support for Multiple-Head Systems

The Belkin Secure KM Switch can be easily configured to support dual-, triple- and up to quad-head computers through the installation of a signed software driver from Belkin. Note that single-head installation does not require any software installation. For multi-head display configurations, please refer to the user manual section, "Multiple-Head Display Driver Installation."

Extensive Administrator Setup Options

Administrator mode provides many customized settings, which includes display arrangement, monitor size, cursor speed and mouse acceleration through the use of the KM Creator and KM Loader customization software. For technical and ordering details, please refer to Appendices A and B of this user manual.

Increased Reliability

Using a new, advanced anti-tampering battery with extremely low self-discharge rate, the life expectancy of the Switch has been increased dramatically to over 15 years.

Desktop Controller Unit (DCU) Support

This feature allows you to connect an optional DCU (sold separately) device to control your KM Switch from up to 50 feet away, which reduces desktop clutter and increases work space. The DCU gives clear and
easy-to-understand indication of which network is currently active. Please refer to the DCU user manual for product functionality or contact Belkin for more details regarding DCU product information and availability.

Belkin DCU Part Numbers: F1DN001R, F1DN002R, F1DN003R

Audio Switching Support

The KM Switch supports audio out switching. Microphone switching is not supported to prevent analog leakages through audio ports.

Port Coloring

The included color chips can be inserted into each port-selector button. Colors can be associated with an established network to facilitate port identification and reduce user switching error.

Port Naming

The included network-name labels can be placed in the area underneath the port-selector button to facilitate port identification and reduce user switching error. Blank labels are also provided for network names that are not listed on the included network-name labels.

LED Indicators

Each port button number illuminates to indicate that the console currently controls the corresponding computer. As a port selector is pushed, or if the mouse cursor crosses between displays associated to different computers or networks, the LED number will light up.

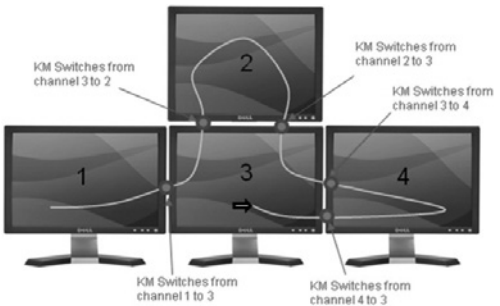
Integrated Mounting Rails (for F1DN104K model only)

The KM Switch features an integrated mounting system for easy under-the-desk or side-wall mounting.

Rack-Mount Brackets (for F1DN108K model only)

This product includes rack-mount brackets for rack-mounting installations.

What is Seamless Cursor Switching?


KM Switches from channel 3 to 2
KM Switches from channel 2 to 3
KM Switches from channel 3 to 4
KM Switches from channel 1 to 3
KM Switches from channel 4 to 3
1
2
3
4

Seamless Cursor Switching (SCS) is implemented in the Belkin Advanced Secure KM Switch to enable seamless cursor and keyboard switching between multiple displays. SCS allows administrators to configure any desired multiple display configuration using the same, or different size displays and resolutions. Simply move the mouse cursor across neighboring displays to switch between connected computers.

Refer to the example in the figure above. Assume that computer #1 is connected to the left display, computer #2 is connected to the top display, computer #3 is connected to the center bottom display and computer #4 is connected to the display at the right side. In this example all four displays are identical. SCS allows the user to move the mouse cursor across the four displays while automatically switching the shared peripherals (keyboard and mouse) based on the current cursor location. For example, when the user moves the cursor from the left display to the center bottom display, the KM identifies the display border crossing between these two displays and switches the keyboard and mouse to computer #3.

SCS is now further enhanced with the inclusion of pointing device drivers to support dual-, triple- and up to 16-head computers. With this technology, user workstations may be integrated with any combination of single-, dual-, triple- and quad-head computers. SCS Configurator software enables the user administrator to easily configure any set of display sizes, resolutions, geometry and physical arrangements.

Equipment Requirements

Cables

Belkin highly recommends you use Belkin USB and Audio cables for your Switch to help ensure superior performance. These cables offer the highest quality possible to ensure optimal data and video transmission. One Cable Kit is required per connected computer.

Belkin USB with Audio Cables

F1D9022b06 – 6 ft. (1.8m)

F1D9022b10 – 10 ft. (3m)

Belkin USB Cables:

F3U133-06 – 6 ft. (1.8m)

F3U133-06 – 10 ft. (3m)

Belkin Audio Cables:

F8V203tt06-E3-P – 6 ft. (1.8m)

Belkin KM Switch USB A to A Programming Cable (Optional cable for KM Configuration Utility use only):

6000-00071 – 6 ft. (1.8m)

Note: See Appendices A and B of this manual for technical and ordering details regarding this cable.

Note: Due to USB signal limitations, the cable length cannot exceed 15 feet (4.6m).

System Requirements

User Operating-System (OS) Support

The Belkin Advanced Secure KM Switch is compatible with computers running on, but not limited to, the following OS platforms:

- Windows® 2000
- Windows XP (Home/Professional)
- Windows 2003 Server
- Windows 7
- Windows 8
- Windows Vista®
- Red Hat® Linux®
- Mac OS® X v.10.6 and higher

User Multiple-Head Operating-System (OS) Support

The Belkin Advanced Secure KM Switch multiple-head driver is compatible with computers running on the following OS platforms:

- Windows 2000
- Windows XP (Home/Professional)
- Windows 2003 Server
- Windows 7
- Windows 8
- Windows Vista

Note: For multiple-head computers, administrators will need to download the Secure KM Switch Mouse Filter driver software from the Support section of Belkin's website, or purchase the optional CD (Belkin part number 8810-00725) containing the KM Switch mouse filter software driver (available only for Windows operating systems at the time of this writing). Multiple-head support for Linux and Mac OS will be added in the future). For latest compatibility listing, please contact Belkin Technical Support at (800) 282-2355. For additional details, please refer to the user manual section "Multiple-Head Display Driver Installation."

Administrator Setup Operating-System (OS) Support

The Belkin Advanced Secure KM Switch administrator setup software suite is compatible with computers running on the following OS platforms:

- Windows 2000
- Windows XP (Home/Professional)
- Windows 2003 Server
- Windows 7
- Windows 8
- Windows Vista

PS/2 Keyboard Console Port

The Belkin Secure KM PS/2 keyboard console port is compatible with the following types of devices:

- Standard PS/2 keyboard
- Bar-code readers emulating USB keyboard
- Standard PS/2 mouse

USB Mouse Console Port

The Belkin Secure KM USB mouse console port is compatible with the following types of devices:

- Standard USB mouse (excluding USB hubs or other USB functions in composite device), or
- Standard USB keyboard or standard KVM extender composite device with keyboard/mouse functions.

PS/2 Mouse Console Port

The Belkin Secure KM PS/2 mouse console port is compatible with standard PS/2 mouse devices.

User Audio Devices

The Belkin Secure KM Switch is compatible with the following types of user audio devices**:**

- Stereo headset
- Amplified stereo speakers

Desktop Controller Unit (DCU)

The Belkin Secure KM Switch is compatible with the following types of Belkin Desktop Controller Unit (DCU) devices: F1DN001R, F1DN002R, F1DN003R

Notes:

• Only DCU devices are to be connected to the KM Switch DCU port.

• Only the following DCU cables are supported:

Belkin DCU Cable Part Numbers

F1D9026-06 (CABLE, RJ14, 6P6C, 26AWG, UNSHIELDED, DCU CABLE, 6')

F1D9026-50 (CABLE, RJ14, 6P6C, 26AWG, UNSHIELDED, DCU CABLE, 50') and higher LAN cable

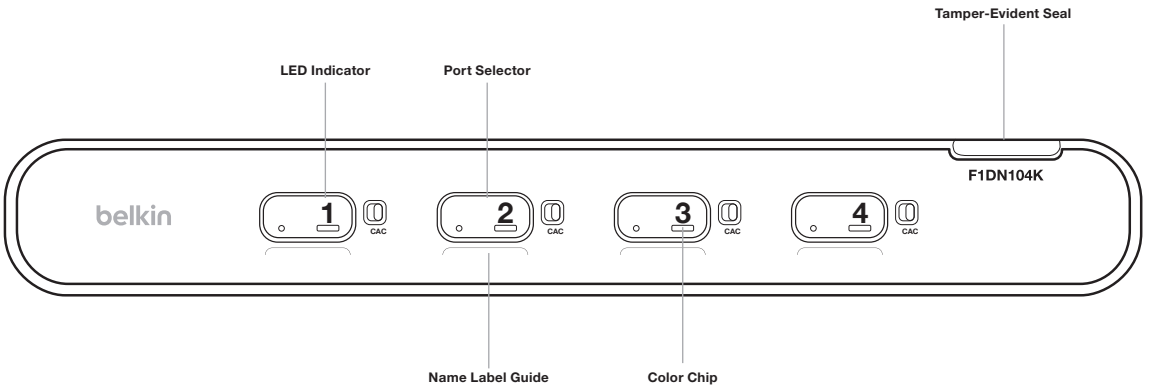
Important:

For DCU usage, do not use cables other than the DCU cables listed above. Do not connect cables to a LAN switch, PoE power injector or other LAN ports. This may result in immediate permanent damage to the Switch or to the DCU.

Programming Cable

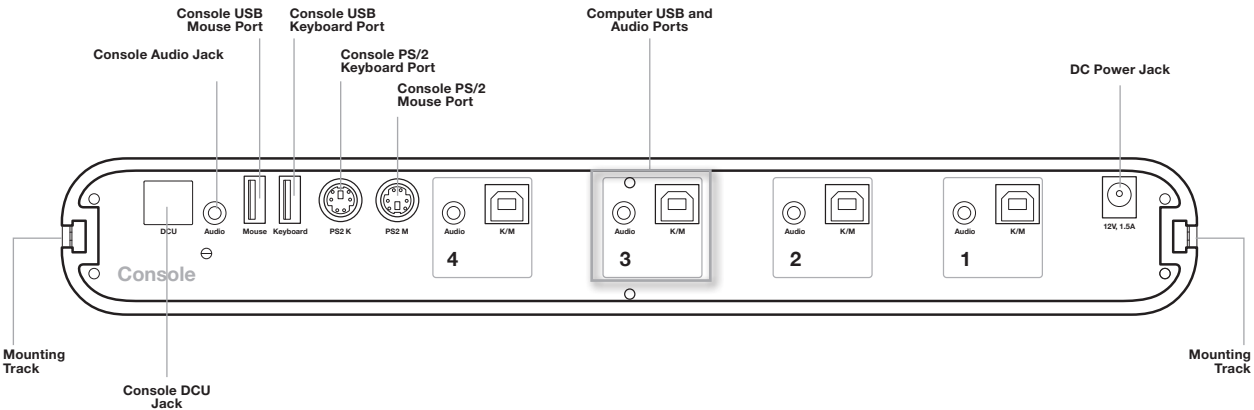
In order to use the Secure KM Switch KMC Creator configuration tool, it is necessary to use Belkin's special USB configuration cable [Belkin part number 6000-00071 (USB A TO A PROGRAMMING CABLE)] included with the Belkin Secure KM Switch.

Unit Display Diagrams, Front View



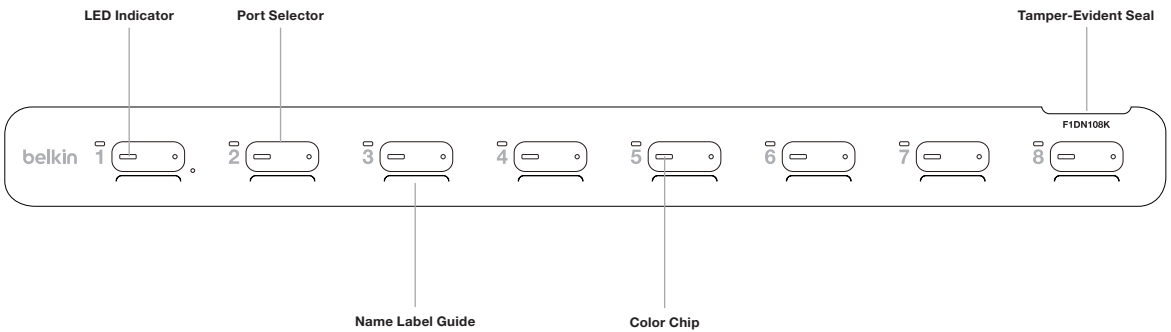
(F1DN104K model shown)

Back View



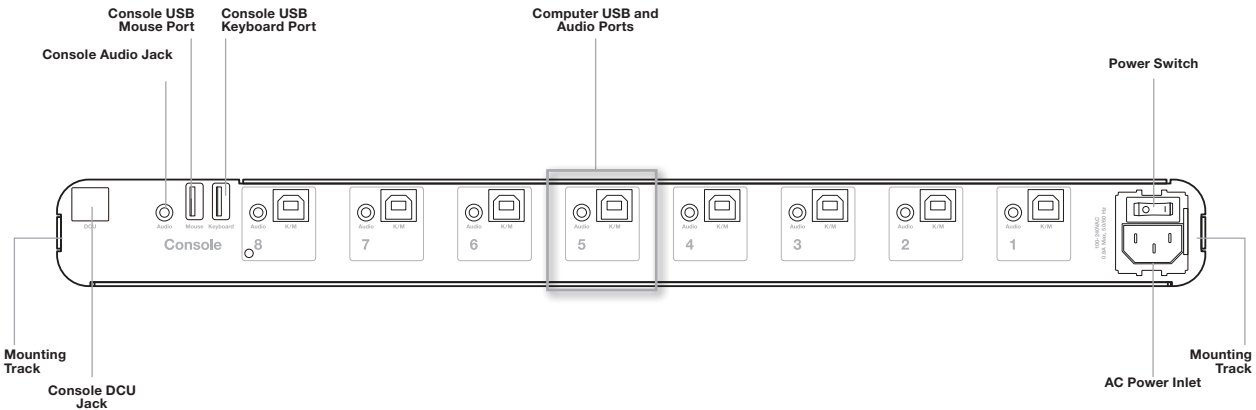
(F1DN104K model shown)

Front View



(F1DN108K model shown)

Back View



(F1DN108K model shown)

Tamper-Evident Labels

The Belkin Advanced Secure KM Switch uses a holographic tamper-evident label to provide visual indications in case of an enclosure intrusion attempt. These labels indicate white dots or the text “VOID” once removed.

IMPORTANT NOTICE:

If for any reason the tamper-evident seal is missing, appears disrupted, or looks different than the example shown here, please call Belkin Technical Support at **(800) 282-2355.**

Active Anti-Tampering System

The Belkin Secure KM Switch is equipped with an always-on active anti-tampering system. If mechanical intrusion is detected by this system, the Switch will be permanently disabled and the LED will be flashing continuously. If a DCU is used, the DCU will indicate that the Belkin Secure KM has been tampered with. If the product indicates a tampered state (all LEDs flashing continuously), please call Belkin Technical Support and avoid using the product.

Specifications

Part No.:	F1DN104K (4-port version) F1DN108K (8-port version)
Enclosure:	Metal enclosure with high-impact aluminum faceplate
Power Requirements:	(F1DN104K) 12V DC, 1.5A (minimum) power adapter with center-pin-positive polarity (F1DN108K) 100–240VAC, 0.9A Max, 50/60Hz
AC Input:	100 to 240VAC
No. of Users Supported:	1
No. of Computers Supported:	(F1DN104K) 4, (F1DN108K) 8
Monitors Supported:	Single-link and dual-link digital DVI-D displays; analog VGA monitors with adapter
Maximum Number of Displays:	(F1DN104K) 16, (F1DN108K) 32
Maximum Total Transitions:	100
Console Keyboard Input:	(F1DN104K) USB Type A + PS/2 Mini-DIN 6-pin female connector (F1DN108K) USB Type A connector
Console Mouse Input:	(F1DN104K) USB Type A + PS/2 Mini-DIN 6-pin female connector (F1DN108K) USB Type A
Console Speaker:	3.5mm female
CPU Keyboard/Mouse Ports:	USB Type B
CPU Audio:	3.5mm female
Port Selectors:	(F1DN104K) 4 (F1DN108K) 8
LED Indicators:	(F1DN104K) 4 (F1DN108K) 8
User Channel Selection Methods:	Front-panel push buttons, SCS, keyboard shortcuts
Administrator Settings:	Display physical size, display resolution X/Y, display orientation (portrait/landscape), display head (1st, 2nd, ..16th), display location (coordinates), mouse speed (1–10), mouse acceleration (1–10), SCS enable/disable, prevent transition while dragging – enable/disable
Operating Temp:	32° to 104° F (0° to 40° C)

Storage Temp:	-4° to 140° F (-20° to 60° C)
Humidity:	0-80% RH, non-condensing
MTBF:	10 years (per MIL-HDBK-217E)
Warranty:	3 years
Dimensions:	(F1DN104K) 12.5 (W) x 6.4 (D) x 1.7 (H inches (F1DN108K) 17.25 (W) x 7.95 (D) x 1.7 (H) inches
Weight:	(F1DN104K) 4 lbs. (F1DN108K) 9 lbs.

Made in the USA

Before Installation

Unpacking the Product:

Before opening the product, inspect the packaging seal condition to assure that product was not accessed or tampered during delivery. If the packaging seal looks suspicious, contact Belkin Technical Support and do not use the product.

After removing the packaging seal, please inspect packaging content to verify that required components included as listed in the Package Contents of this manual.

After the Secure KM Switch is removed from its packaging materials, inspect the four tampering-evident labels to assure that product is properly sealed. If one or more label is damaged or missing, contact Belkin Tech Support and do not use that product.

Where to place the Switch:

The enclosure of the Switch is designed for desktop or under-the-desk mount configurations. An optional Mount Kit (Belkin part number F1D006) is available for the F1DN104K. Rack-mount brackets are included with the F1DN108K.

Consider the following when deciding where to place the Switch:

- Access to the front-panel push buttons is not required, since the switching can be done through the Seamless Cursor Switching (SCS) interface.
- The lengths of the cables attached to your keyboard and mouse
- The location of your computers in relation to your console
- The lengths of the cables attached to the displays
- The lengths of the cables you use to connect your computers to the Switch

Warning: Avoid placing cables near fluorescent lights, air-conditioning equipment, or machines that create electrical noise (e.g., vacuum cleaners).

Connection and Installation

Step 1 Connecting the Console Devices to the Secure KM Switch

Warning: Before attempting to connect anything to the Switch, or your computers, please ensure that all computer equipment and devices are powered off.

1.1 Connect each monitor directly to the computers. Optionally for easier referencing, label each computer and monitor coupled together

1.2 Connect the user keyboard to the Console section of the Switch. For USB-type keyboards, connect to the USB port marked “Keyboard.” For PS/2-type keyboards, connect to the PS/2 port marked “PS2 K.”

1.3 Connect the user mouse to the Console section of the Switch. For USB-type mice, connect to the USB port marked “Mouse.” For PS/2-type mice, connect to the PS/2 port marked “PS2 M.”

Note: The Switch will not operate properly if the keyboard and mouse are not connected to their respective locations as listed on the steps above. Additionally, keyboards with integrated USB hubs, card-readers, storage devices or multimedia extensions are not supported. Only keyboard functions are supported for devices connected to the keyboard ports.

1.4 Connect a user headphone or amplified speakers to the audio output port marked “Audio” on the Console section of the Switch.

Caution: Do not connect a microphone to the audio output port.

Step 2 Connecting Computers to the Secure KM Switch

2.1 Connect each computer to the Switch ports marked “K/M” with standard USB A to B cables (Belkin part number F3U133-06 or F3U133-10). Each USB cable can be connected to any free USB port in the computer.

Note: If the quantity of computers is less than the number of K/M ports, connect the computers sequentially (K/M port 1, K/M port 2, etc.). The USB cable must be connected directly to a free USB port on your computer with no USB hubs or other devices in between.

2.2 Connect each audio cable (Belkin part number F8V203tt06-E3-P) from the Switch to each computer’s audio output (lime green color) or line output (blue color) jacks.

Step 3 Powering Up

3.1 Power on all of the monitors.

3.2 Connect the Secure KM Switch to the cable plug of the 12V 1.5A external power supply.

3.3 Connect the power adapter IEC power plug to a nearby wall outlet.

3.4 Power up all the attached computers, and check for display and peripheral functionality. All computers can be powered on simultaneously.

Note: Your computers should recognize the Secure KM Switch and automatically install the HID USB driver if necessary.

You should be able to move the mouse cursor on the primary display connected to computer #1. Check to see that the keyboard and mouse are working normally on each computer. Repeat this check with all occupied ports to verify that all computers are connected and responding correctly.

If you encounter an error, check your cable connections for that computer and reboot. If the problem persists, please refer to the Troubleshooting section in this User Manual.

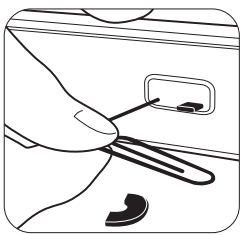
Color Code Chip Installation

The Belkin Advanced Secure KM Switch's port-selector buttons can be color-coded for easier identification. Refer to the installation instructions below.

Note: You may have to remove the existing black color chip first.

Insert color chip

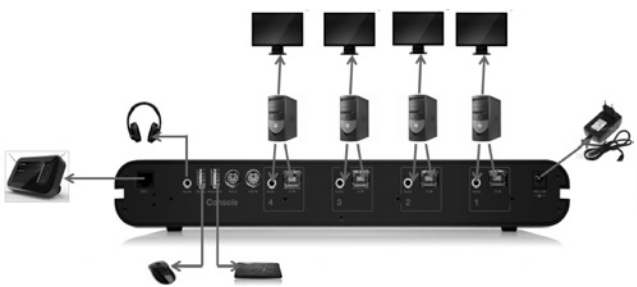
Remove color chip with a standard paperclip



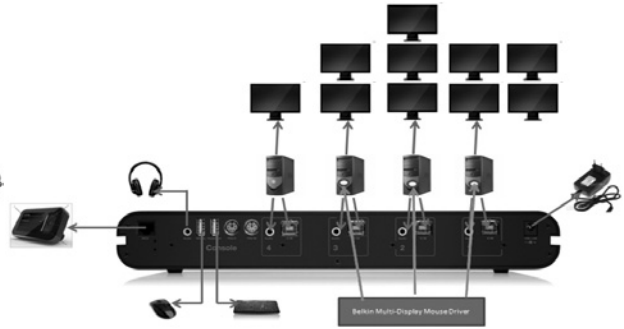
Port Name Label

The included network-name labels can be placed in the area underneath the port-selector buttons for port identification. Blank labels are also provided.

Typical System Installation Diagrams



(Figure 1 - Typical system installation for four single-head computers)



(Figure 2 - Typical system installation for four dual-head computers)

Note: The arrows pointing to the computers indicate that the Multiple-Head Display Driver (Belkin Advanced Secure KM Switch Mouse Filter driver software) is loaded on each computer.

Administrator Setup

Once the Secure KM Switch is connected and powered on, essential operational settings need to be configured.

The first and most important setting of the Switch is the monitor positioning. It is essential that the Switch configuration will match the actual positioning on the monitors.

There are two ways to configure the Switch with the actual monitor setup:

- Select one of the predefined setups
- Create a configuration file and load it to the Switch

Keyboard Shortcuts

The following table describes the keyboard shortcuts available:

Key Sequence	Name	Description
CTRL, CTRL, F11, r	Reset to factory defaults	Device will reset to factory defaults with all settings and configuration deleted completely.
CTRL, CTRL, F11, f	Freeze	Disable SCS. Switching between systems will not be possible via mouse movement.
CTRL, CTRL, F11, U	Unfreeze	Enable SCS. Switching between systems will be possible via mouse movement.
CTRL, CTRL, F11, +	Increase mouse speed	Mouse speed will be increased.
CTRL, CTRL, F11, -	Decrease mouse speed	Mouse speed will be decreased
CTRL, CTRL, F11, d, c	Setup mode	In the next boot after pressing this key combination, the device will boot into setup mode allowing him to communicate with configuration utility.
CTRL, CTRL, F12	Last loaded configuration	Revert to the last externally loaded configuration (configuration loaded via configuration utility).

Selecting One of the Predefined Setups

To load one of the default settings available in the non-volatile memory of the Switch:

1. Select a default configuration type on the console keyboard by pressing the following keys in this sequence: Control, Control, F11, Fx (refer to figure 3). For example: The key sequence Control, Control, F11, F2 will set the displays laid out horizontally, with the left-most display to computer #1, the second display as computer #2, the third display as computer #3, and the fourth display to computer #4.
2. Power-cycle the Switch by disconnecting the power plug and reconnecting to the Switch.
3. The Switch will boot with the new configuration.

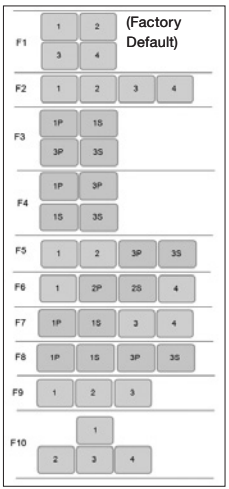
Note: Additional settings can be accessed through Control, Control, F11, x, x (refer to figures 5 and 6).

The loaded configuration will also include the following settings by default:

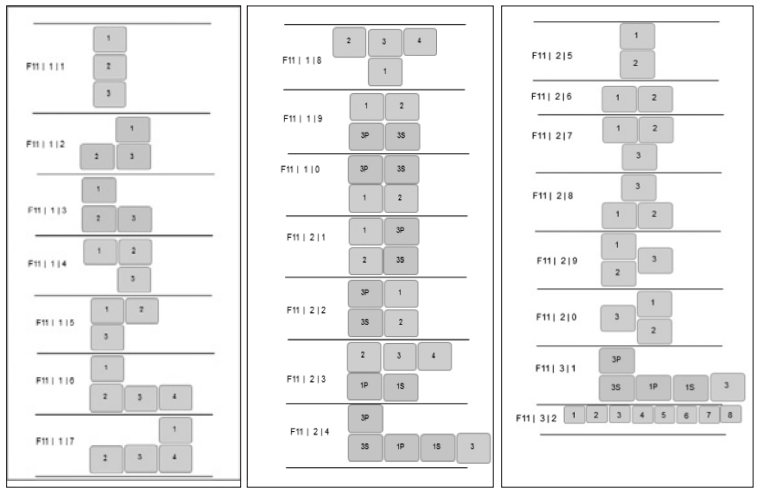
- All displays are 1920 x 1200 resolution, same size (26” diagonal)
- Mouse acceleration is set to 6
- Mouse speed is set to 5
- SCS is enabled
- Prevent transition while dragging feature is enabled

Creating a Custom Configuration File (Optional)

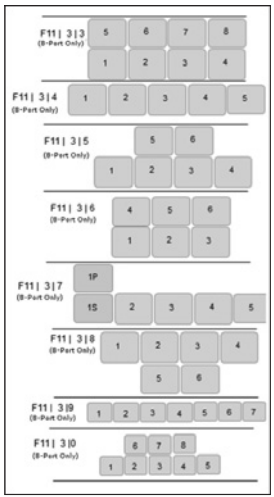
In case the required configuration does not appear on the predefined configurations list, you can create a configuration file using Belkin's Secure KM Configuration Utility Tool and load it to the Switch. For more information about this option, please refer to Appendices A and B of this user manual.



(Figure 3 – Pre-Defined Configuration List - Using CTRL, CTRL, F11, Fx)



(Figure 4 – Pre-Defined Configuration List - Using CTRL, CTRL, F11, x, x)



(Figure 5 – Pre-Defined Configuration List – Applies to 8-Port KM Version Only - Using CTRL, CTRL, F11, x, x)

Note: The KM Configuration Utility Tool is designed to be used by administrators only for configuring the display layout for each deployment environment if the predefined configuration list does not accommodate the needs of the user's multiple monitor layout.

Mouse Speed Setting

Constant mouse cursor speed is essential for system usability. Having several systems each with a different cursor "ground speed" is detrimental for the user. Belkin's Secure KM Switch calculates and adjusts the cursor speed across different displays and computers using the geometry and display settings entered by the administrator.

In addition, the Switch settings include a global speed setting with input values between 1 and 10, which can be changed to adjust the cursor speed for all displays. Typical initial setting of cursor speed is 5. After initial use, the exact value can be set based on user inputs.

To increase mouse speed, press CTRL, CTRL, F11, +
To decrease mouse speed, press CTRL, CTRL, F11, -

SCS Enabled/Disabled Setting

Through the SCS enabled/disabled setting, you can disable the mouse cursor tracking function. Once SCS is disabled, the Switch will enable channel selection only through:

1. Front-panel push buttons
2. Keyboard shortcuts, and
3. DCU (if connected)

Note: This setting is enabled by default.

Multiple-Head Display Driver Installation

To enable proper KM interaction with computers having multiple heads (more than one display), the Belkin Advanced Secure KM Switch Mouse Filter driver software must be installed. This driver is available in an executable .EXE file that can be installed on the target computer. Please download the multiple-head display driver from the Support section of Belkin's website, or contact Belkin to order the optional CD (Belkin part number 8810-00725) that is part of the KM Switch Accessory Kit.

Note: This driver must be removed from computers prior to using the computer without Belkin's Secure KM. Failure to do so will result in loss of mouse functionality when a mouse (USB or PS/2) is connected directly to the computer. Contact Belkin Technical Support if issues persist.

Operation

Cursor Tracking (SCS Enabled)

Upon powering up, the cursor will be positioned at the center of the primary display of computer #1. The keyboard and audio will be coupled to the same PC where the cursor is active. Once the user moves the cursor to another display, the keyboard and audio will follow that computer.

Front-Panel Push Buttons

The default channel is #1 upon powering up. The user can select any other channel by pressing the appropriate front-panel push button. The mouse cursor will be positioned at the center of the selected computer display. If the computer has multiple heads, then the cursor will be positioned at the center of the primary display. The selected channel is indicated by an LED illuminated in the appropriate push button. The keyboard and audio will follow the selected channel.

Prevent Transition While Dragging Feature

The Belkin Advanced Secure KM Switch offers a unique feature that further improves usability—Prevent Transition while Dragging. When this feature is enabled, if the user drags an object on one display (while the left mouse key pressed), the cursor will not leave that display. This feature prevents the loss of that dragging action while accidentally crossing the display border line. This feature may be enabled or disabled through the administrator setup. By default, this feature is enabled. Please refer to the “Keyboard Shortcuts” table for details.

Cursor Acceleration and Speed

Cursor speed and acceleration is a combination of few factors such as display size, resolution and static settings. If the current settings are not constant across the different displays or not working properly, please ask your system administrator for assistance. Both cursor acceleration and speed can be set by the administrator to reach desired settings.

Important Security Note:

If you are aware of potential security vulnerability while installing or operating this product, we encourage you to contact us immediately at the following email address: gov_security@belkin.com

The gov_security@belkin.com email address is not intended to reach technical support on Belkin products or services. Any support inquiries should be directed to support@belkin.com.

What do I do if I find that the tamper-evident seal on the Switch has been removed or disrupted?

Please call Belkin Technical Support at (800) 282-2355 immediately. The Switch's circuitry may have been compromised.

How far can the Switch be from my computer?

The Switch can be located up to 15 feet (4.6m) away from your computer due to DVI- and USB-cable limitation unless a KVM extender and Belkin DCU are used.

Do I have to install software to use the Switch?

In case the required configuration does not appear on the predefined configurations list, you can create a configuration file using Belkin's Secure KM Web Configuration Tool and load it to the Switch.

To enable proper KM interaction with computers having multiple heads (more than one display), the customized Secure KM Switch mouse driver software must be installed. For details, please refer to Appendices A and B of this user manual.

Does the Switch require an AC adapter?

For the F1DN104K model, the Switch requires a 12-volt DC, 1.5-Amp (minimum) power adapter in order to function properly. For the F1DN108K model, the power supply is already built-in, and does not require an external power supply.

Does the Switch support Linux?

Please refer to the System Requirements section of this user manual for technical details.

What computer equipment does the Secure KM Switch support?

The Switch is compatible with systems and peripherals available in the market that support the operating systems listed in the Systems Requirement section of this user manual. Please contact Belkin Technical Support at (800) 282-2355 for compatibility issues you may experience.

General

No power, and none of the front-panel LEDs are illuminating.

- Check that the power supply (for the F1DN104K model) or the AC power cable is properly connected to the mains socket.
- Check that DC plug is fully inserted into the switch DC jack (for the F1DN104K model).
- Check that the device is powered by using an optical mouse with visible red light. If power is not available, change the power supply.
- Check that the power switch at the back of the KM Switch (for the F1DN108K model) is in the ON position.

The port-selector buttons are not functioning.

If a DCU is being used, the channel switching is controlled using the DCU and the port-selector buttons are disabled.

Channel select LEDs are blinking with audible repeating clicking sounds.

- This occurs after the configuration is set. Power cycle the unit (disconnect and re-plug the power adapter).
- If the blinking and clicking still persist after power cycling the unit, it is possible that the device's anti-tampering system was triggered. Change the unit and call Belkin technical support.

Keyboard

Keyboard and mouse are not working (all channels)

- Check that keyboard is not plugged into mouse port, and vice-versa.

The computer does not detect my keyboard, or my keyboard does not work when I switch computers or reboot.

- Check that the keyboard you are using is connected properly to the Switch.
- Check that the USB cable between the Switch and the computer is completely connected.
- Try connecting to a different USB port on the computer.
- Make sure the keyboard works when directly plugged into the computer (the HID USB driver is installed on the computer). Rebooting may be necessary when trying this.
- Make sure you are not using a keyboard with an integrated USB hub or other USB-integrated devices.
- If the computer is coming out of standby mode, allow up to one minute to regain mouse function.
- Try a different keyboard.

The CAPS, NUM, and Scroll Lock lights on my keyboard do not function when I connect to the Switch.

This is normal operation. The lock-state information is fully functional. Due to the security of the Switch and known exploitation of lock-state information for leakages, the LED status is not supported. Please refer to the operating system for verification of the lock-state information for CAPS, NUM, and Scroll Lock.

Certain keyboard functions are not working.

Some non-standard keyboard functions are disabled by the Switch to prevent security risks. Contact Belkin Tech Support for the latest compatibility list.

Mouse

Mouse cursor does not leave primary display to secondary display in multiple-head computer.

Driver was not installed on that computer or was not installed properly. Reinstall driver.

The computer does not detect my mouse, or my mouse does not work when I switch computers or reboot.

- Check that the mouse you are using is connected properly to the Switch.
- Check that the USB cable between the Switch and the computer is completely connected.
- Try connecting to a different USB port on the computer.
- Make sure the mouse works when directly plugged into the computer (the HID USB driver is installed on the computer). Rebooting may be necessary when trying this.
- Make sure you are not using a wireless mouse or a mouse with an integrated USB hub or other USB-integrated devices. These are not supported by the Switch due to security policy.
- If the computer is coming out of standby mode, allow up to one minute to regain mouse function.
- Try a different mouse.

For extending USB, use only active USB extenders (over CAT5 cable).

APPENDIX A – Secure KM Configuration Utility Software (KMC Creator)

Belkin's Secure KM Configuration Utility (KMC Creator) is an optional software tool that allows for users using the Switch to define their monitor setup and create a KM configuration file. The KM configuration file (.kmc extension) will later be loaded to the Switch that will be configured accordingly.

Note: Refer to Appendix B for loading the configuration file to the KM Switch using the KMC Loader.

Using the KMC Creator software, administrators can define any number of monitors connected to each computer with different or identical sizes and screen resolutions. The monitors can be deployed in any physical layout. This software also allows removal of unneeded bridges between monitors.

Before You Begin

Please download the Secure KM Switch software files from the Support section of Belkin's website, or contact Belkin to order the optional CD-ROM disc (Belkin part number 8810-00725) containing files for the KMC Creator and the KMC Loader.

A KM configuration file is based on the number of computers that will be connected to the KM and the number of monitors each computer will have connected to it. Make sure you know the sizes and native screen resolution of all monitors connected to all computers that will eventually be connected to that KM switch.

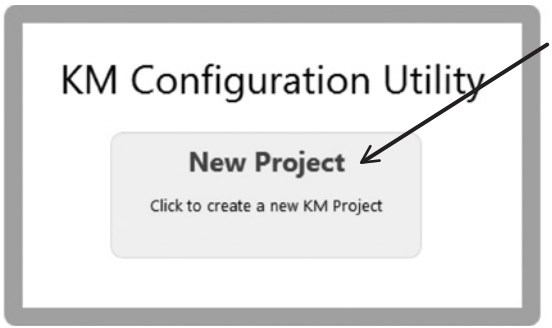
Notes:

- The KM Creator and Loader software do not need to be loaded on each computer.
- The software is to be loaded to an external computer, so that the connected monitors and computers are accessible for display resolutions.
- This external computer will be used to create and input that created file into the KM.

Step 1 – Create a New Project

Each KM configuration file is called a "KM Configuration Project." For every setup you will be required to create a new project. Click "Back" to return to the previous stage at any point during the configuration process.

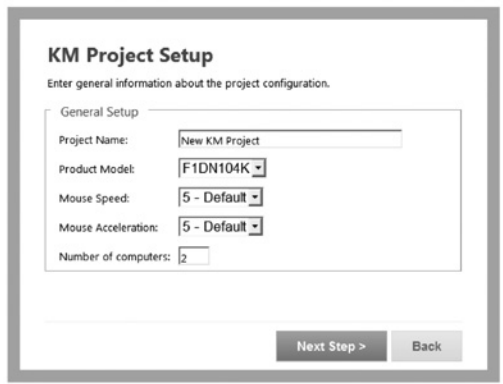
• Click on "New Project"



Step 2 – Enter Project Details

Please enter the requested information in the following manner:

- Project Name – The name can be a combination of English characters or numbers. It is advised to use a name that will be reflective of the configuration, for example: "Dealer 3 5 monitors," "Generic Workstation 7." The project name can be read from the KM after loading.
- Product Model – The product model can be found on the back sticker of the KM Switch. The Belkin Advanced Secure KM Switch can support two to four computers.
- Mouse Speed – This is the default mouse speed for all systems. Changing the mouse speed on each computer will not affect the KM mouse speed.
- Mouse Acceleration – Same as above.
- Number of Computers – The total numbers of computers that will be connected to the KM for this configuration.
- Click "Next Step"



Step 3 – Enter Description

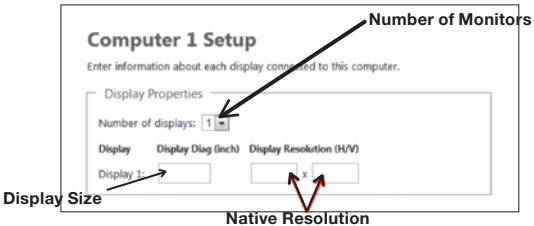
Add the description that will explain the project. The description will appear in the configuration file (.kmc) and can help explain the configuration.

Step 4 – Computer Setup

In this stage, the administrator will define the number and type of monitors connected to each computer as defined in step 2. For every computer, define the number of monitors connected to the computer by selecting it from the drop-down menu "Number of Displays." The maximum number of possible displays is limited to four per computer.

Once the number of monitors is selected, you will be able to enter the size and native resolution for every monitor.

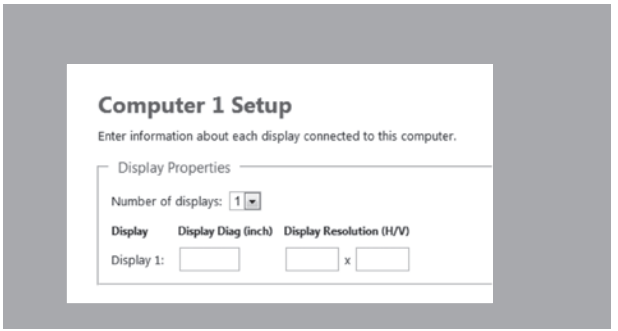
Note: If a certain monitor is set to portrait orientation, the native resolution should be entered accordingly. For example, for a monitor with a native screen resolution of 1680x1050, which is used in portrait, please enter resolution of 1050x1680.



Multiple Display Setup

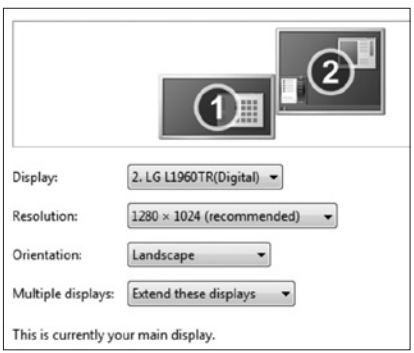
When creating a setup with multiple displays for one of the computers, there is an additional requirement to enter the Microsoft virtual desktop parameters.

When using multiple monitors on one of the machines, both the KM and MS Extended desktop are controlling the switching between the monitor. Both mechanisms need to work synchronously.

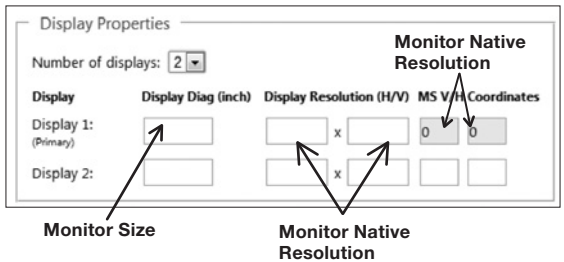


The following instructions and screen captures are based on Windows 7, but can be used for Windows XP and Windows Vista.

- Go to: “Control Panel\All Control Panel Items\Display\Screen Resolution.” You can also right-click your desktop and select screen resolution.
- In the KM configuration dialog you will be asked to provide information regarding your primary display. Primary display is defined as “main display” in the MS “Screen Resolution” dialog. You can see which is defined as your main display by selecting it in the MS dialog.



- Enter the details for your main display as requested in the dialog.



- Enter the details for the secondary display. To find out what are the vertical and horizontal MS values, select the secondary monitor and move it slightly. Two numbers will appear on the secondary monitor. Enter both numbers in the dialog.

Step 5 – Place the Displays and Create the Geometry

In the stage, the administrator will create his displays setup. The administrator can drag and drop the monitors that were created in proportion that reflect the size and shape of his actual monitors until he creates a view similar to his real environment.

Each display is clearly marked by his computer number and monitor number as entered by the administrator in the previous stage.

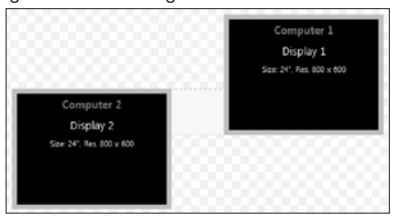
Monitors can be connected side by side or set apart, based on the actual geometry required.Once the monitors are placed, yellow “bridges” will indicate the area in which the mouse “teleports” itself from one monitor to another.

Clicking on one of these areas will remove it, which will prevent the mouse cursor from “teleporting” through this bridge. To enable the bridge between monitors, just drag one monitor to the desired monitor, having them touch each other. Pull apart the monitors, and the bridge should appear between the monitors again.

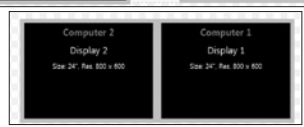
Examples:

Example 1 - The following setup creates a corridor from the top right of monitor 2 computer 2 to the top bottom left of monitor 1 computer 1.

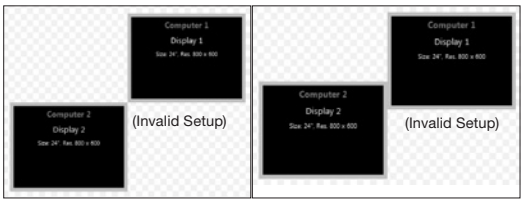
Trying to drag the mouse through the red lines will not work.



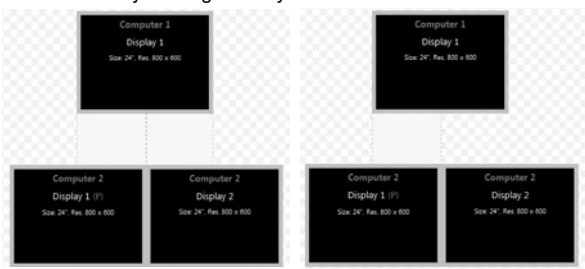
Example 2 – Both configurations below create identical setups in which the mouse cursor moves from the right of computer 2 to the left of computer 1.



Example 3 - The setup shown below is invalid. There is no interface between the two monitors hence the curser will not move. It is recommended to use the below bottom setup instead, which will give similar results.



Example 4 – The two setups below are identical except that on the right setup, the user chose to prevent the mouse cursor from moving from: Computer 2, Display2 to Computer 1, Display 1.
This was done by clicking on the yellow area between the monitors.



Multi-Displays Rules

- Computers with multi displays Rule #1 – When one of the computers is configured with multi displays, the setup of those displays connected to the same PC must be similar to that configured on the MS setup.
- Computers with multi displays Rule #2 – All displays connected to the same PC must be stuck to one another. It is impossible to have distance between two displays connected to the same PC.

Step 6 – Complete Setup

Once ready, the administrator will press the “Complete Setup” button.

A file with an extension ending in “.kmc” will be generated and downloaded automatically.

Please refer to Appendix B for instructions on how to upload the .kmc configuration file to the KM Switch.

APPENDIX B – SECURE KM CONFIGURATION UTILITY (KMC LOADER) SOFTWARE

Belkin's Secure KM Configuration Utility (KMC Loader) allows you to load the configured .kmc file (created per the procedure defined in Appendix A of this manual) into the Secure KM Switch.

Note: Please refer to Appendix A for instructions on installing the executable setup file that installs the KMC Creator and KMC Loader programs and create the .kmc files needed for the following steps.

Setting Up the KM Switch for Loading the Configuration (.kmc) File

The KM Switch is configured through a cable connected from a PC containing the KMC Loader to the KM USB mouse port. The connection is done via a special USB Configurator Cable that is part of the optional KM Switch Accessory Kit.

1. Disconnect the mouse connected to the Console mouse port of the KM Switch.
2. Connect the USB Configurator Cable from a PC to the mouse port of the KM Switch.
3. Put the KM Switch into administration mode (CTRL, CTRL, F11, d, c). The KM Switch will click several times to audibly indicate that it needs to be power cycled.
4. Power cycle the KM Switch by unplugging the DC plug of the power supply and re-plugging it after a few seconds.

Loading Utility

Once the KM is in Administration mode and is connected to the PC:

- Run the loading utility (KMC Loader). Wait for five to 10 seconds until the KMC Loader window shows “KM Ready,” as shown:

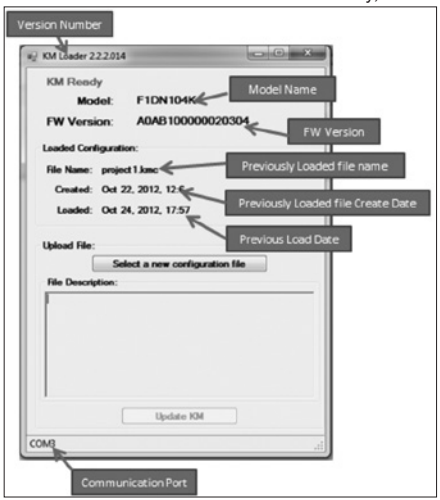


Figure 1 – KM Loading Utility capture – before selecting a file

Loading a Configuration File

- Click on “Select a new configuration file”
- Browse to your .kmc configuration file
- Click on “Update KM”

After the .kmc file is loaded, the following screen will show:

Figure 2 – KM Loading Utility capture – file selected and loaded

After loading is complete, restart the KM by disconnecting and then reconnecting power. Reconnect the mouse back to the mouse port and the new configuration will apply.

KM Loader Troubleshooting and Support

The KMC Loader Utility communicates with the KM Switch to load the configuration file.

The two most common errors when using the loading utility are:

- Configuration file incorrectly formatted
- No communication with KM Switch

Configuration File Incorrectly Formatted

When loading a wrong configuration file, the Loading Utility will report the issue if possible and will direct the user to load another file.

To avoid this, make sure the files you have loaded were created with the KMC Creator configuration tool and that it was not manually modified in any way.

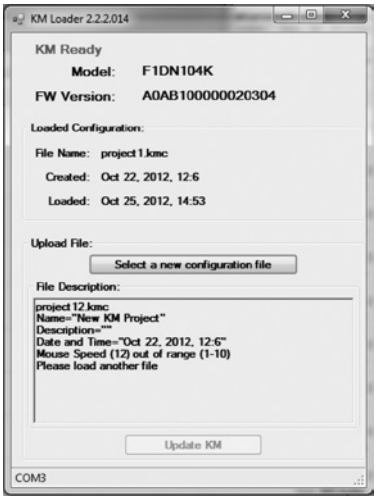


Figure 3 – KM Loading Utility capture – File not correct

No Communication with KM Switch

If the utility cannot communicate with the KM Switch, it will prompt "KM Not Ready" and no communication port will appear.

Figure 4 – Communication between KM and utility has been lost

To avoid this, ensure that the KM Switch is connected via the mouse (not keyboard) Console port on the KM Switch. Put the KM Switch in administrative mode as explained previously.

FCC Statement

DECLARATION OF CONFORMITY WITH FCC RULES FOR ELECTROMAGNETIC COMPATIBILITY

We, Belkin International, Inc., of 12045 E. Waterfront Drive, Playa Vista, CA 90094, declare under our sole responsibility that the products: F1DN104K and F1DN108K to which this declaration relates:

Comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE Declaration of Conformity

We, Belkin International, Inc., declare under our sole responsibility that the products F1DN104K and F1DN108K, to which this declaration relates, are in conformity with Emissions Standard EN55022 and with Immunity Standard EN55024, LVP EN61000-3-2, and EN61000-3-3.

ICES

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme á la norme NMB-003 du Canada.

Belkin International, Inc., Limited 3-Year Product Warranty

What this warranty covers.

Belkin International, Inc. (“Belkin”) warrants to the original purchaser of this Belkin product that the product shall be free of defects in design, assembly, material, or workmanship.

What the period of coverage is.

Belkin warrants the Belkin product for three years.

What will we do to correct problems?

Product Warranty.

Belkin will repair or replace, at its option, any defective product free of charge (except for shipping charges for the product). Belkin reserves the right to discontinue any of its products without notice, and disclaims any limited warranty to repair or replace any such discontinued products. In the event that Belkin is unable to repair or replace the product (for example, because it has been discontinued), Belkin will offer either a refund or a credit toward the purchase of another product from Belkin.com in an amount equal to the purchase price of the product as evidenced on the original purchase receipt as discounted by its natural use.

What is not covered by this warranty?

All above warranties are null and void if the Belkin product is not provided to Belkin for inspection upon Belkin's request at the sole expense of the purchaser, or if Belkin determines that the Belkin product has been improperly installed, altered in any way, or tampered with. The Belkin Product Warranty does not protect against acts of God such as flood, lightning, earthquake, war, vandalism, theft, normal-use wear and tear, erosion, depletion, obsolescence, abuse, damage due to low voltage disturbances (i.e. brownouts or sags), non-authorized program, or system equipment modification or alteration.

How to get service.

To get service for your Belkin product you must take the following steps:

1. Contact Belkin International, Inc., at 12045 E. Waterfront Drive, Playa Vista, CA 90094, Attn: Customer Service, or call (800)-223-5546, within 15 days of the Occurrence. Be prepared to provide the following information:
   a. The part number of the Belkin product.
   b. Where you purchased the product.
   c. When you purchased the product.
   d. Copy of original receipt.
2. Your Belkin Customer Service Representative will then instruct you on how to forward your receipt and Belkin product and how to proceed with your claim.

Belkin reserves the right to review the damaged Belkin product. All costs of shipping the Belkin product to Belkin for inspection shall be borne solely by the purchaser. If Belkin determines, in its sole discretion, that it is impractical to ship the damaged equipment to Belkin, Belkin may designate, in its sole discretion, an equipment repair facility to inspect and estimate the cost to repair such equipment. The cost, if any, of shipping the equipment to and from such repair facility and of such estimate shall be borne solely by the purchaser. Damaged equipment must remain available for inspection until the claim is finalized. Whenever claims are settled, Belkin reserves the right to be subrogated under any existing insurance policies the purchaser may have.

How state law relates to the warranty.

THIS WARRANTY CONTAINS THE SOLE WARRANTY OF BELKIN. THERE ARE NO OTHER WARRANTIES, EXPRESSED OR, EXCEPT AS REQUIRED BY LAW, IMPLIED, INCLUDING THE IMPLIED WARRANTY OR CONDITION OF QUALITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND SUCH IMPLIED WARRANTIES, IF ANY, ARE LIMITED IN DURATION TO THE TERM OF THIS WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

IN NO EVENT SHALL BELKIN BE LIABLE FOR INCIDENTAL, SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR MULTIPLE DAMAGES SUCH AS, BUT NOT LIMITED TO, LOST BUSINESS OR PROFITS ARISING OUT OF THE SALE OR USE OF ANY BELKIN PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

This warranty gives you specific legal rights, and you may also have other rights, which may vary from state to state. Some states do not allow the exclusion or limitation of incidental, consequential, or other damages, so the above limitations may not apply to you.

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